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ABSTRACT

The accuracy and reliability of the student data base at the University of the District of Columbia were assessed. The data base, which is used by administrators for planning purposes, consists of the number of students enrolled in various course sections, the number of students enrolled in various departments by levels, and the principal fields of specialization selected by students. Sources of data, methods of control, and documentation procedures were examined. Interviews were conducted with administrators of the computer center and with representatives of the various offices within the university that process, review, and collect student data. Results indicate that the student data base is accurate and reliable. Reevaluation is recommended since the project was undertaken during the consolidation of the university. (Author/SW)

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ASSESSMENT OF THE RELIABILITY OF THE STUDENT DATA BASE

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UNIVERSITY OF THE DISTRICT OF COLUMBIA
Office of Institutional Research

February 1979

U.S. DEPARTMENT OF HEALTH
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1. Introduction

In April 1978, the Office of Institutional Research (OIR) was requested by the Office of the President to assess the accuracy and reliability of the student data base. This data base is used by the administrative and academic offices of the University for planning purposes. Primarily, the student data base consists of the:

- number of students enrolled in various course sections;
- number of students enrolled in various departments by levels;
- areas, i.e., Business and Liberal Arts, that students have chosen as their major fields of study; and

In conducting this study, OIR examined three core areas - sources of data, methods of control and documentation procedures. These ares were examined, because they are basic elements to any test of data accuracy and reliability. Chart A depicts the various stages undertaken in this study.

The assessment was based on interviews held with administrators of the Computer Center and representatives of offices within the University who process, review or collect student data and communicate directly with the Computer Center. Only the primary sources of data were interviewed. The interview method was employed, since it has the advantage of being both direct and flexible. Also, it allows general questions to trigger objective and specific responses.

These intreviews were held from the middle of April to the end of May. Each interview lasted from one to three hours, depending on the type of information and system used by an office to transmit data to the Computer Center.

Basic questions on control, documentation and sources of data were postulated in preparation for the interviews (see Appendix A). However, during the actual interviews, these questions were used as guidelines, because it was found that inquiries had to be tailored around the particular operational procedures of each office. For example, only the Registrar's Office was questioned on procedures for acquiring student data from the academic departments, because it is responsible for receiving and transmitting such data to the Computer Center.

The Computer Center was the first office interviewed in order to determine the users and/or suppliers of data for processing. Based on the conferences with the Computer Center, we interviewed the following offices: Cashier's, Mt. Vernon Campus; Cashier's, Van Ness Campus; Financial Aid; Admissions; and Registrar's. Further meetings were held with the Computer Center to present them with the preliminary findings.

Chart A
Logic Flow of Assessment of Student Data Base

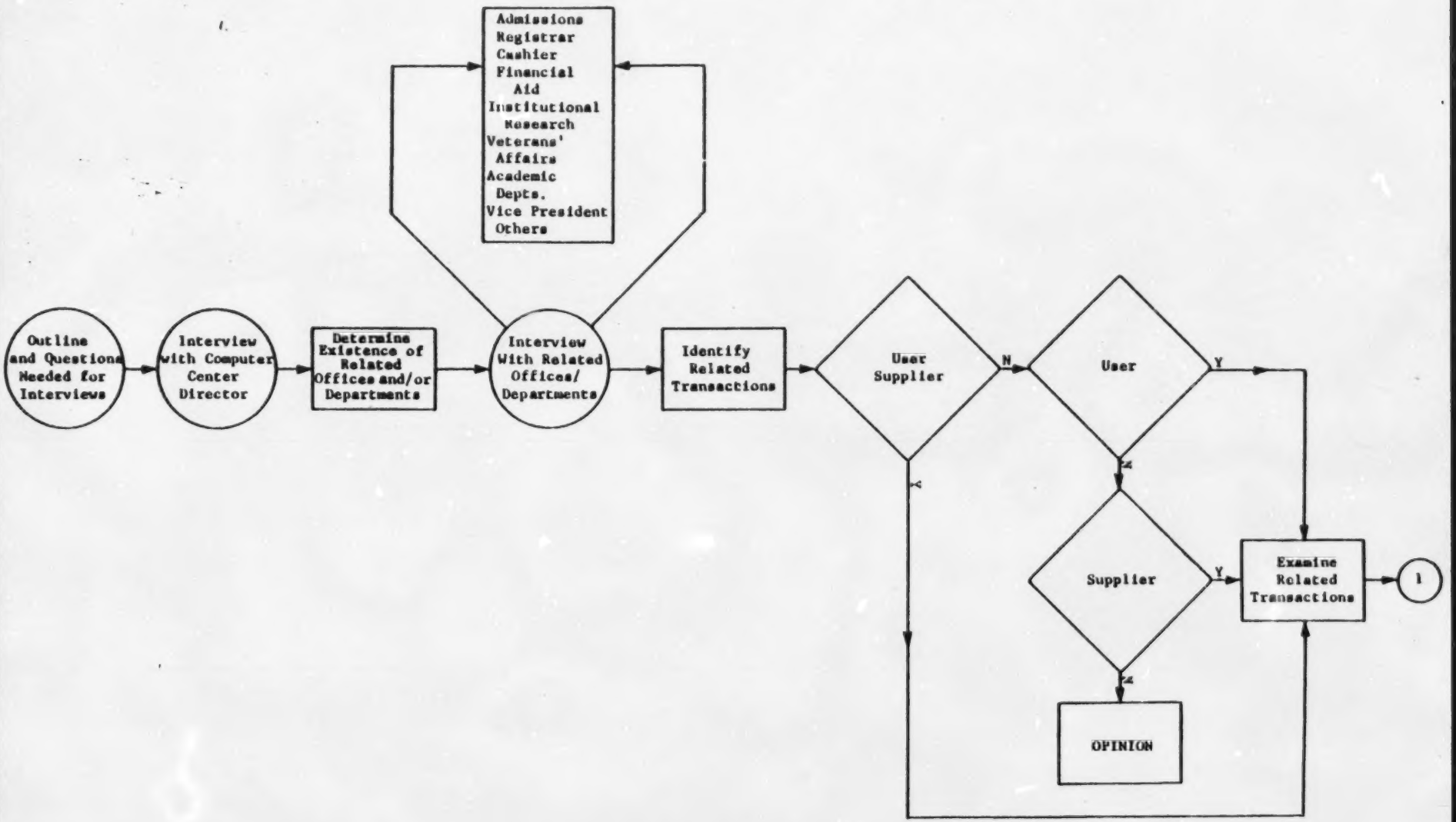


Chart A
Logic Flow of Assessment of Student Data Base (Cont.)

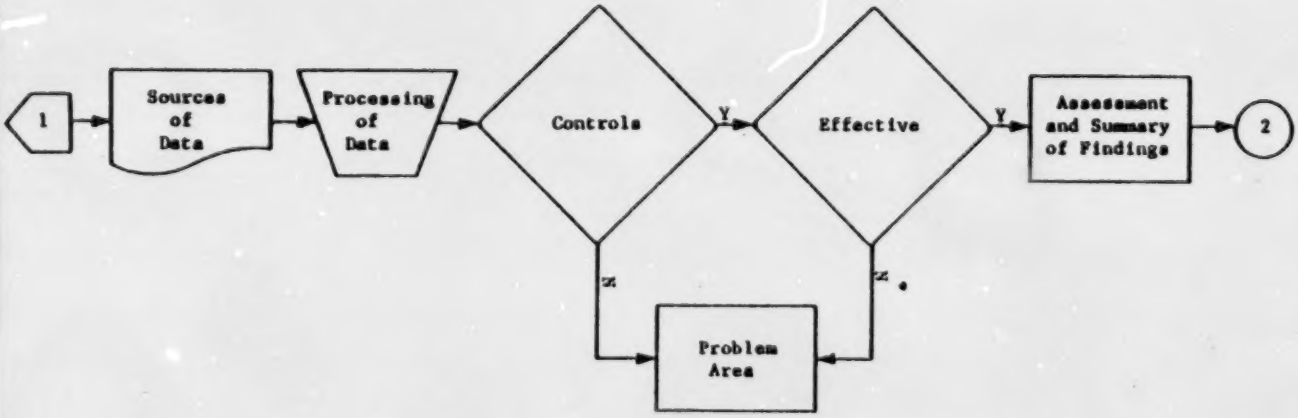
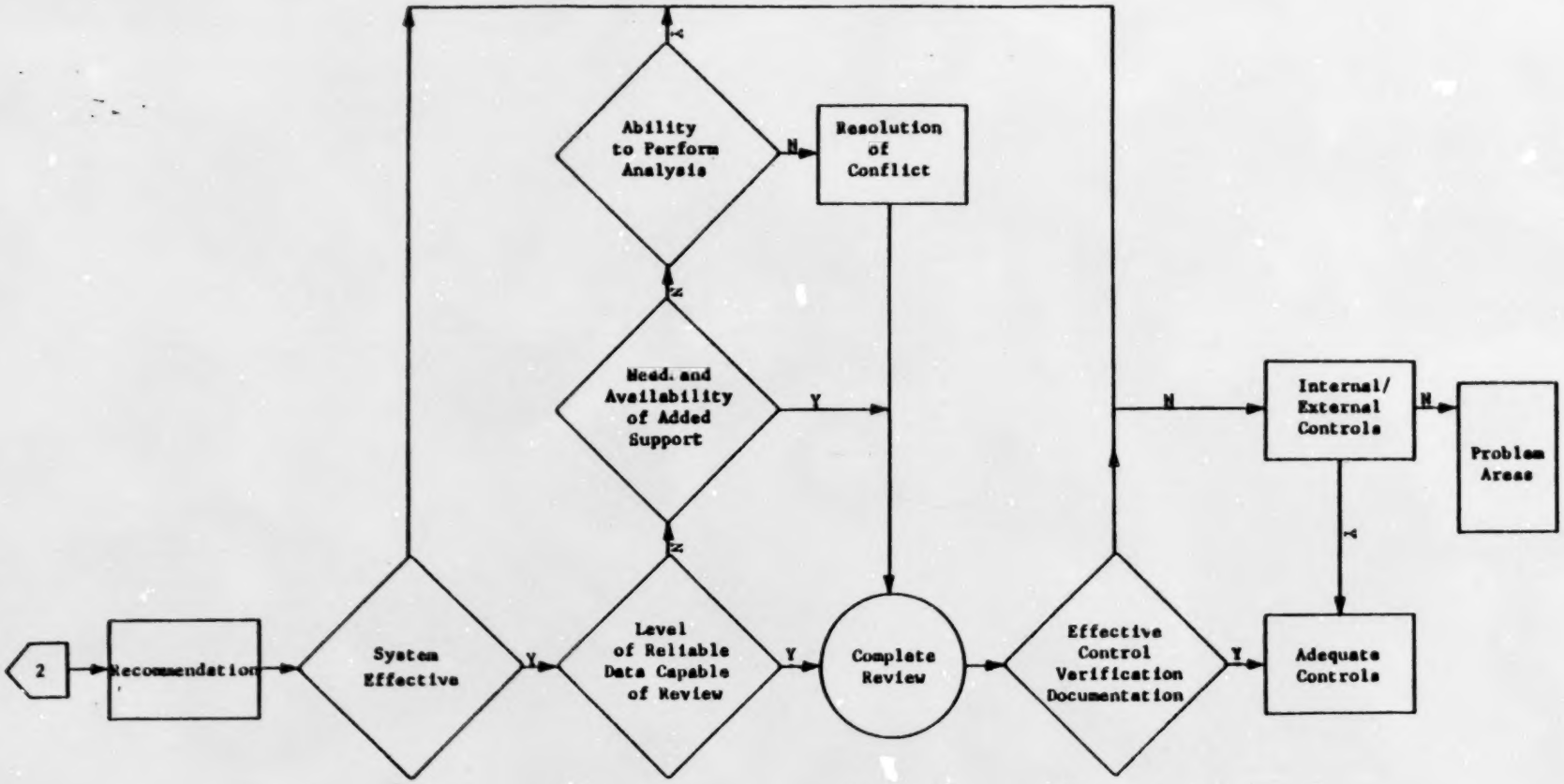


Chart A
Logic Flow of Assessment of Student Data Base (Cont.)



PHASE II

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rations of a computer center at a partic-

iversity Computer Center. Further, pro-

erall views expressed in this study may be

:ion is completed.

interviewed for this study primarily because

:ted to the Registrar's Office. It is that

.ord and transmit data to the Computer Center.

3. Areas of Responsibility of Offices Interviewed

It is important to know the responsibilities of each office in order to relate the types as well as the sources of data it is responsible for. This section, therefore, gives a brief description of the functions of each office.

The Office of Admissions is responsible for admitting all new and returning (re-admitted) students to the University. Data gathered are transferred credits from other colleges and universities students have attended, high school transcripts, sources of financial support and all demographic data, including statements of residency.

The Office of the Registrar is responsible for maintaining all information on a student once the student has been admitted. Records of the student's progression at the University are processed through the Registrar's Office. Student transcripts are also maintained by this office. In conjunction with the academic departments via the department chairpersons, the Registrar's Office is responsible for compiling and updating department and major codes. Also, in conjunction with the academic departments, this office is responsible for maintaining records on courses offered and any changes pertinent to title, time, days, buildings, rooms as well as additions or deletions of courses.

The Cashier's Offices at the Mt. Vernon and Van Ness Campuses are responsible for maintaining records on tuition and fees paid by students during the "on-line" registration process. Records are maintained on students who have paid, students who have deferred payment as well as agencies that are responsible for payment of tuition of their employees.

The Financial Aid Office maintains records on students applying for and receiving financial aid. Further, the Financial Aid Office is responsible for assigning work-study students to different units within the University.

Chart B provides a quick glance at the correlation of responsibilities of the above-mentioned offices to those of the Computer Center.

4. Sources of Data

The student is the initial source of data. Chart C depicts the flow of student data. It indicates that the student supplies data to the Admissions Office, Registrar's Office, and participates in the on-line registration process. The student provides data to the Admissions Office in order to enter the University; to the Registrar's Office to record any changes in major, name, address, etc.; and participates in the on-line registration process to enroll in courses.

The Admissions Office transmits the data on students via optical scan forms to the Computer Center. A list of accepted and rejected students is then generated. A month before registration the Admissions Office sends to the Computer Center a list of admitted students who will receive permits to register. In turn, the Computer Center generates permits and address labels. This list of admitted students is the basis for creating a file on a student.

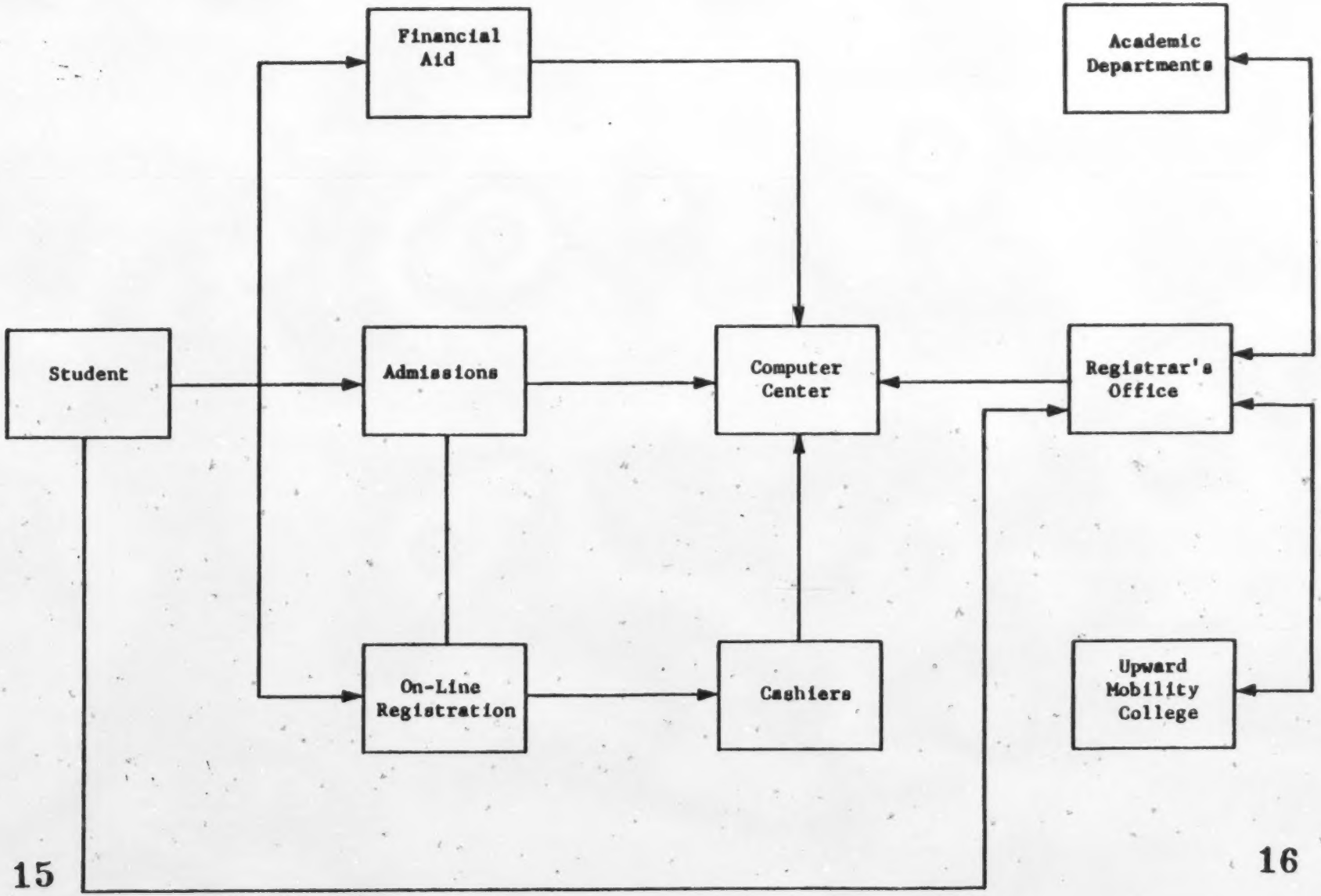
If a student fails to enroll for two or more consecutive semesters, his name is dropped from the preliminary admissions file but not from the master name file. Once a student has been dropped from the preliminary admissions file, he must apply for readmission and follow basically the same procedures as a new student.

Chart B
Primary Responsibilities for the Input of Student Data

Office	Responsibility	Computer Center Responsibility
Admissions	Gather demographic data and educational experiences from students for admittance into the University.	Generate list of accepted and rejected students.
Registrar's	Conduct on-line registration.	Man computer terminal.
	Maintain records of student data received from academic departments, Upward Mobility College, and students.	Process data. Record data on students' files.
Cashier's	Collect tuition from students during on-line registration process.	Generate batch prooflisting of tuition transactions.
Financial Aid	Collect data on students who apply for financial aid.	Process data only for students on the Van Ness Campus.
	Maintain files of students receiving financial aid.	

Chart C

Flow of Student Data from Primary Source to Computer Center



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Financial Aid	Collect data on students who apply for financial aid.	Process data only for students on the Van Ness Campus.
	Maintain files of students receiving financial aid.	

The on-line registration process is the vehicle that traces the student's activities during his tenure at the University. Each time a student registers for classes; data on courses, credit hours and term of registration are entered in the student's file through the computer terminal.

During the registration process, the Cashier's Office must maintain a record of the students who have paid tuition or who have deferred tuition. A report - batch proof listing - is obtained from the Computer Center and is matched against the student's program of study. The information assists the Registrar's Office in determining who should not be admitted to class due to nonpayment of tuition and fees.

Academic departments - including the Upward Mobility College - submit to the Registrar's Office grades and other data pertinent to the students' activities during the semester. The Registrar's Office then submits these data to the Computer Center for processing.

Data on students receiving financial aid at the Mt. Vernon and Georgia/Harvard Campuses were processed at the American College Testing (ACT) Center in Iowa City, Iowa. Data on financial aid recipients at the Van Ness Campus, however, were processed through the former Van Ness Computer Center. According to the Financial Aid Office, the practice of sending Mt. Vernon and Georgia/Harvard data to ACT Center was initiated; because apparently, the Computer Center at the Mt. Vernon Campus did not have a program to handle such data. It should be noted that this practice was in effect before the centralization of the Computer Centers.

Data files are created in the Computer Center from optical scan forms received from the Admissions Office. The files are established by keypunching the data on tape. Once the files are established, information on each student is continually updated as the student progresses through the University.

5. Verification of Data

Although each office is responsible for verifying data sent to and received from the Computer Center, methods vary from office to office. The Admissions Office transfers data received on the student application form to the optical scan forms. These forms are sent to the Computer Center without being verified. After processing these forms, the Computer Center sends back an error report that depicts incomplete or missing data. Corrections are then made either on the old or new optical scan form by clerks in the Admissions Office, and the corrections are submitted to the Computer Center. Occasionally, errors occur e.g., a social security number is inverted. Errors of this type are detected by the computer when a duplicate social security number appears or by the student at the time of registration. Changes or updates of transfer credits may be done at any time subsequent to a student being admitted. Any other changes, i.e., address, name, are made by the student through the Admissions Office prior to registration only. Changes which occur after registration must be made by the student through the Registrar's Office.

The process of verifying, updating and/or changing student records is complex. Grades, grade changes, course schedules and transfer credits are submitted by personnel of the academic departments to the Registrar's Office. And, it transmits the data to the Computer Center for processing. The Computer Center returns the data in the form of prooflistings via the Registrar's Office to the academic departments for review and corrections. The Registrar's Office does in-house research. This research includes resolving discrepancies students discover on their transcripts. After academic departments concur that errors have been made in students' records, the Registrar's Office instructs the Computer Center in incorporating the corrections. The Registrar's Office is the only office that has this authority.

The Cashier's Offices at both campuses receive a batch prooflisting from which data can be verified. The listing is verified against transactions recorded on the students' programs of study. Corrections are sent to the Computer Center for an updated listing. After corrections have been made, the computerized files on students are frozen.

The Computer Center maintains that it is the responsibility of the requesting office to impose verification and control procedures. The center limits its responsibility to verifying data that have been mechanically punched.

6. Documentation Procedures

Most offices interviewed had no viable systems for documentating actions taken on requests sent to the Computer Center. Only the Registrar's Office used an organized documentary system for a period of time.

Little or no documentation procedures are carried out in the Admisions Office. The documentation is in the form of a list of registered students which is generated by the Computer Center.

The Registrar's Office requested, through the Acting Registrar, a liaison person from the Computer Center to assist in documenting, verifying, and controlling the data. The liaison person kept a log on jobs sent to and received from the Computer Center. The log included information on the types, numbers assigned to, and dates the jobs were requested; expected completion dates; and actual completion dates.

Documentation in the Financial Aid and Cashier's Offices were limited to printouts received from the Computer Center; and in the case of the Cashier's Offices, the programs of study.

An audit trail on data received for processing is maintained by the Computer Center. The audit trail begins with logging in of data received and continues through the processing of data to providing computerized reports to the requesting party.

During the on-line registration process, the Computer Center accumulates on tape the number of students registering for courses.

7. Problem Areas

The necessity to hand carry data from the 9th and E Streets building (17) to the Computer Center located on the Van Ness Campus to insure that data have been received and logged in is a major problem for the Admimissions Office. In addition, turnaround time[1] is a another problem. These problems are a direct result of the consolidation of the Computer Centers and the relocation of the Central Office to the Van Ness Campus. According to the Admissions Office, however, no problems of significance were experienced prior to the consolidation of the centers. Lengthy turnaround time, which has resulted in not being able to supply data to students in a timely fashion, is a problem also being experienced by the Registrar's Office. As with the Admissions Office, this problem is a result of the consolidation of the Computer Centers. Not knowing the status of data on file, i.e., whether or not they are current, is another problem the Registrar's Office feels is associated with the consolidation process. The Registrar's Office maintains that they did not have adequate time to research the master name file to insure proper updating.

A problem encountered by the Registrar's Office which has direct bearing on the output of processed data and not associated with the consolidation is that staff members do not always know how to communicate their needs to the Computer Center. Further, staff members cannot always interpret data received after processing by the Computer Center. With the exception of the above, the Registrar's Office maintains that they had no major problems with the center prior to consolidation.

Turnaround time is a problem for the Financial Aid Office also. This office stated that data remain in the Computer Center for long periods of time. Consolidation of the centers is believed to be the culprit here, too. The Financial Aid

[1]The period required between the submision of a job to its completion.

Office stated that prior to consolidation there was no computer program to handle financial aid data for the Mt. Vernon and Georgia/Harvard Campuses. Subsequent to consolidation, however, the problem appears to be that of modifying the existing Van Ness program to accommodate data from the other two campuses.

The Cashier's Office at the Van Ness Campus feels that the only use they are able to make of the Computer Center is that of a highspeed typewriter. This results in the Cashier's Office performing many of its required tasks manually.

At the Mt. Vernon Campus, the Cashier's Office stated that one problem they have encountered is: a student may not appear on a roster, although money has been collected from the student. Another problem encountered by that office is: names and/or tuitions are sometimes erroneously erased.[1] Again, turnaround time is lengthy which results in not being able to determine whether or not a student has paid. Further, a student may not have paid his tuition(the last step of the registration process) and, due to slow turnaround time, may not be discovered until the end of the semester.

The Computer Center is experiencing many problems in consolidating student records. According to the Computer Center status report for the month of May 1978 (See Appendix B), the center maintains that:

- consolidation of grades files has not been completed, because a consistent grading system has not been established by the Registrar's Office.

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[1]The Computer Center refuted this statement. In an interview held with the center on May 23, 1978, it was stated that there is a complex system of retaining tapes and disks. Back-up tapes and disks are stored in fireproof vaults.

- consolidation of the admisions systems has not been completed, since the Admissions Office has not established a unified system; and
- consolidation of a financial aid system has not been completed, because that office has not established a unified system.

In almost every instance, the problems were traced to sources outside the Computer Center.

8. Findings

The primary source of data is the students themselves during the admission and registration processes. Subsequent updating of student records is performed exclusively by the Registrar's Office through the recording of courses, grades and other pertinent data received from department chairpersons and from the students upon reviewing transcripts and/or grades and reporting changes of addresses or names. Offices such as Financial Aid only maintain data on students that is of particular interest to their programs.

Verification of data varies from office to office. Although generally, data verification is quite dependent on an error listing mechanically produced by the Computer Center. The Registrar's Office has the most complex system of verifying data, since data are received from a number of sources including the academic departments and the students.

Most offices do not have systematic documentation procedures. They rely on printouts and their logging procedures or the Computer Center. None of the offices interviewed maintained an audit trail as a method of tracking and documenting data transmitted to and received from the Computer Center.

Problems encountered by both the Computer Center and the offices with which it interacts are:

- turnaround time which is a direct consequence of the consolidation of the Computer Centers of the three campuses;
- lack of communication in expressing needs to the Computer Center;

- absence of financial aid computer program to handle the needs of Mt. Vernon and Georgia/Harvard Campuses;
- lack of data from offices in question to complete consolidation of admissions, financial aid and registration systems;
- some personnel of offices contacted found it diffucult to properly interpret reports from the Computer Center; and
- related to the consolidation of the various programs on the three campuses.

None of the offices interviewed expressed difficulties with the reliability or accuracy of the data. One allegation of inaccurate data was made by a division, but was refuted by the Computer Center. The problem was resolved. It was substantiated that this problem was caused by the use of an improper report to obtain data. Based on results of this study, it can be assumed that the student data are both accurate and reliable.

9. Recommendations

An audit trail should be maintained by every office which submits data for processing the Computer Center. By so doing, each office would be able to determine the exact status of data being processed, the origin of the data, and potential areas where errors are likely to occur. An audit trail would, of course, provide a systematic documentation procedure.

A higher level of responsibility should be assumed by the Computer Center for reports it generates. While it is true that the Computer Center generates reports based on the request of and criteria set forth by its users, shared responsibility for reports would result in a greater comprehension of the data produced. A comprehensive scrutiny of the reports by the Computer Center and the requesting office would insure accuracy of data.

A series of seminars should be initiated by the Computer Center to instruct users on:

- how to communicate their needs;

- how to interpret the reports which are generated from data they have provided; and
- the services available through the computer system.

Subsequent to the completion of the consolidation of the Computer Center, another assessment of the student data base should be undertaken. This is necessary in order to determine if problems expressed herein have diminished, since a number of them were directly related to the consolidation effort.

Appendix A

Questions to Be Considered in Assessing Reliability and Accuracy of Student Records.

For The Computer Center

Sources:

1. Where does the data originate?
2. In what form is it received?
3. Is there a standard procedure for the acquisition of data?
4. Who submits changes and updates to student records?

Control:

1. Are there any standard procedures for the review and update of records?
2. What checks of validity are imposed on data?
3. How many persons are involved in the processing of a given report?
4. Of the persons processing a given report, what are their levels of responsibility?
5. At what point(s) in the processing of data are checks for errors made?
6. Are periodic status checks maintained from the acquisition of data through to the final report?
7. Who is responsible for the verification of data?
8. What mechanism is used for the update of student records?
9. How often are student records updated?
10. What is the procedure for the correction of errors?
11. Is there a system for deriving control totals on statistical reports?

Documentation:

1. Are logs kept on the acquisition of student data?
2. How are the computer programs which produce student records/statistics documented
3. Are there standard procedures for documentation of student records?
4. Is documentation kept on all data and all resultant reports?
5. Are records maintained on the disbursement of student records/statistical reports?

FOR OTHER ADMINISTRATIVE AND ACADEMIC DEPARTMENTS.

Sources:

1. Where does data originate?
2. In what form is data received?
3. Are there scheduled times for the acquisition of data?
4. Where do changes to student data or updates originate.

Controls:

1. Are there any standard procedures for the review and update of data?
2. What checks of validity are imposed on data?
3. How many persons are involved in the acquisition and processing of student data?
4. What are the levels of responsibility of persons involved in the acquisition and processing of student data?

Controls: (Con't)

5. What is the extent of the offices interaction with the computer center?
6. Are data submitted by the office verified upon its return from the Computer Center?
7. What is the extent of the verification of data received from the Computer Center.

Documentation:

1. How is data compiled by the office documented?
2. Are sources of data documented?
3. Is there a system for recording the status of data being processed in the office?
4. Is there a system for recording the status of data being processed by the Computer Center?
5. Are changes and updates to data documented?
6. Are changes and updates to data which are submitted to the Computer Center documented?

Appendix B

MONTHLY STATUS REPORT
COMPUTER CENTER
UNIVERSITY OF D.C.

SUBMITTED BY:

JESSE J. MAYES
ACTING DIRECTOR
COMPUTER CENTER

MAY 1978

CONTENTS

- ADMINISTATION
- SYSTEMS MAINTENANCE
- ADMINISTRATIVE SYSTEMS
- REGISTATION SYSTEMS
- STUDENTS RECORDS
- OPERATIONS

REGISTRATION SYSTEMS

REGISTRATION SYSTEMS

TASKS COMPLETED:

1. Allow students to register for any course.
2. Allow students to register at any terminal.
3. Store fees in proper batch
4. Restrict students not in good ACADAM standing to 4 credits hours for the Summer semester.
5. Collect stat. data during registration.

OUTSTANDING TASKS:

1. Allow for larger course number
2. Change programs to university students rather than by each campus.

STUDENT RECORDS

SECTION - STUDENT RECORDS

PERIOD - MAY - JUNE 8, 1978

SUPERVISOR - Cornell Jackson

TASKS ACCOMPLISHED:

- o Processing of earyl grades for Graduation
- o Processing of 772 Grade Rosters, Mailers and Reports
- o Honors Convocation Request
- o Preliminary Admissions Reporting Capabilities
- o Financial Aid Reporting Capabilities

TASK NOT ACCOMPLISHED:

- o Consolidation of Grade Files
- o Consolidation of Admissions System
- o Consolidation of Financial Aid System

PROBLEMS:

- o Consolidation of Grade Files has not been completed mainly because a consistent grading system has not been established by the Registrar.
- o Consolidation of the Admissions system has not been completed because a unified system has not been decided upon by the Admissions Offices.
- o Consolidation of Financial Aid System has not been completed because a unified system has not been established by the Financial Aid Offices.